



Frontier innovations for control of sarcomas

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The 48th Annual Musculoskeletal Tumor Meeting of the Japanese Orthopaedic Association (hereafter, Annual Musculoskeletal Tumor Meeting) will be held July 9 and 10, 2015, in Takamatsu, Kagawa Prefecture, Japan. Since I currently serve as chief of the Department of Orthopaedic Surgery at Kagawa University, my duty will be to oversee this meeting. As the Annual Musculoskeletal Tumor Meeting is one of the three major academic meetings held under the auspices of the Japanese Orthopaedic Association, managing this meeting is a great honor for both me and all the members of our orthopaedic surgery department here at Kagawa University, as well as the department's alumni association. We are deeply grateful for the support of everyone involved from the Japanese Orthopaedic Association.

As I have been consistently engaged in clinical medicine and basic research related to bone and soft tissue tumors, I have regularly participated in the Annual Musculoskeletal Tumor Meeting. On the basis of experience obtained thus far, I hope that I will be able to organize a meeting that will prove to be productive, beneficial, and truly meaningful for all participants.

The purpose of the Annual Musculoskeletal Tumor Meeting is to introduce cutting-edge clinical medicine and basic research in the field of bone and soft tissue oncology, to provide holistic therapy through palliative medicine and nursing care, to establish collaborative relationships between orthopaedics and other related medical fields, to provide guidelines for the diagnosis and treatment of bone and soft tissue tumors to the members of the Japanese

Orthopaedic Association specializing in other fields, and to enlighten the general public about bone and soft tissue oncology. With these purposes in mind, I hope to organize a functional and efficient academic meeting by summarizing the points for discussion.

The Annual Musculoskeletal Tumor Meeting has been aimed at fostering close cooperation among orthopaedists, pathologists, and radiologists, and specialists in these disciplines have made valuable contributions through exchange of knowledge and opinions. While acknowledging the progress that has been made in the field of bone and soft tissue oncology during the last few decades through this mutual relationship, I anticipate that the coming meeting will provide an opportunity to clarify what is needed for the future development of our field.

I also recognize that the coming meeting will be important for disseminating new knowledge regarding the surgical treatment of patients with bone and soft tissue tumors, because this is the task that falls to orthopaedic surgeons. I would also like to address issues such as palliative medicine, therapeutic approaches to psychosomatic medicine, and drug therapy for metastatic bone disease.

The last 30 years or so have also seen advances in chemotherapy for bone and soft tissue tumors, and a variety of protocols have been introduced. However, no definitive chemotherapy has been established for bone and soft tissue tumors other than osteosarcoma, and spindle cell soft tissue sarcoma in particular. Meanwhile, in Europe and other countries, a new chemotherapeutic drug, trabectedin, was recently approved for the treatment of progressive soft tissue sarcomas [1]. A clinical trial of trabectedin was also conducted in Japan, but it failed to show any clear effectiveness for various bone and soft tissue tumors. Therefore, whether trabectedin is effective in this setting needs to be evaluated using many more cases. On the other hand,

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combination chemotherapy with gemcitabine and docetaxel has been reported as effective for treatment of lung cancer, breast carcinoma, gastric carcinoma, and ovarian cancer. Although combination chemotherapy using these drugs has been used experimentally for soft tissue sarcomas, its effectiveness has not been clearly demonstrated [2]. Furthermore, second-line combination chemotherapy using these drugs has not been sufficiently assessed. While molecular-targeted drugs were thoroughly discussed at the 47th Annual Musculoskeletal Tumor Meeting in terms of basic research and clinical applications, pazopanib hydrochloride has only been widely applied since 2012 [3]. Therefore, it will still take several years before a sufficient number of patients have been treated with this drug and its mid-term clinical and side effects can be assessed. In the coming meeting, the mid-term clinical results obtained with these new chemotherapeutic and molecular-targeted drugs will be presented, and this should allow us to predict the extent to which these drugs will lead to improved treatment.

Denosumab, a receptor activator of the nuclear factor kappa-B ligand (RANKL) inhibitor, has been approved in Japan since 2014 for treatment of giant cell tumors of bone [4]. Classified as a borderline group, giant cell tumor of bone is one type of neoplasm that is sometimes difficult to control clinically. I am keenly interested in whether the new molecular-targeted drugs will make a significant contribution to the treatment of these tumors. At the author's institution, cementation for giant cell tumors of bone was abandoned in 2014, and the treatment now involves a combination of thorough curettage and postoperative repeated administration of denosumab.

Meanwhile, introduction of a number of surgical technologies into the field of orthopaedics has been slow. For example, robotic surgery using the da Vinci Surgical System has been applied experimentally to head and neck surgery and to various types of thoracic and abdominal surgery, such as that for prostatic cancer [5]. However, in the field of orthopaedics, the prospects for introduction of the da Vinci Surgical System appear slim. I hope that the coming meeting will provide an opportunity for considering the possibility of applying the da Vinci Surgical System to surgery for bone and soft tissue tumors. Up to now, we have treated a considerable number of cases using heavy ion radiotherapy. The effectiveness of this technology for patients with inoperable bone and soft tissue tumors, as well as the measures taken to avoid the complications that it can cause, has been extensively discussed at this academic meeting in the past. However, in comparison to other fields, intensity-modulated radiation therapy (IMRT) has been used less frequently for the treatment of malignant tumors in the limbs and spine [6]. Unlike heavy ion radiotherapy, however, IMRT is a comparatively simple procedure to perform. I would therefore like to address the IMRT

as an item for discussion at the coming meeting as a potential new application in the field of orthopaedics.

Reconstruction using a mega-prosthesis after treatment for malignant bone tumors and reconstruction using recycled bone have been widely and thoroughly compared in a series of discussions at the Annual Musculoskeletal Tumor Meetings. These methods, including some older classical approaches, have been attempted over a period spanning some 30 years. By concentrating on long-term clinical results over periods of 20 years or more, I would like to include these reconstruction methods, along with their associated complications and measures for dealing with them, as a discussion theme at the meeting.

Analysis of fusion genes has led to significant change in the classification of bone and soft tissue sarcomas, facilitating dramatic progress in their pathological diagnosis over the last 10 years [7]. I am interested in whether the classification of malignant tumors according to gene mutation is consistent with conventional diagnosis made on the basis of surgical pathology, and if this is not the case, in clarifying the types of gaps that exist between the two. Another matter of interest is clarifying the clinical course of each group of diseases diagnosed using gene analysis, and whether the progress corresponds to that of the counterpart entity diagnosed by conventional surgical pathology.

Although our field offers little chance for discoveries as dramatic as, for example, induced pluripotent stem cells (iPS cells), I hope that presenters at the coming meeting will emphasize the progress they have made and how they have added to conventional knowledge.

My earnest hope is that academics at universities nationwide and medical doctors specializing in bone and soft tissue tumors will show their support and cooperation with us here at the Department of Orthopaedic Surgery at Kagawa University, in order to make the coming meeting productive for all participants. I will also make every effort to achieve this aim, along with all of our departmental members and those of the alumni association. I am looking forward to meeting you all in Takamatsu in July 2015.

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